

REMARKS

Claims 1-12, 39, and 40 are pending in this application. Claims 36-38 have been canceled without prejudice or disclaimer. Claims 1, 39, and 40 have been amended. In particular, claims 1, 39 and 40 each recite, in part, fine particles having an average diameter of 0.5 nm or more. No new matter has been added.

Claim rejections under § 112

Claims 1-12 and 36-40 have been rejected under 35 U.S.C. §112, second paragraph, for being indefinite. The Examiner's comments have been considered and appropriate correction has been made. In particular, claims 1, 39 and 40 each recite, in part, fine particles having an average diameter of 0.5 nm or more. Claims 2-12 depend from claim 1 and are allowable for at least the same reasons. Claims 36-38 have been canceled without prejudice or disclaimer. Claims 1-12, 39, and 40 are now in condition for allowance.

Claim rejections under §102

Claims 1-3, 5, 6, and 9-12 have been rejected under 35 U.S.C. 102(b) as being anticipated by Bulkowski (U.S. Patent No. 4,618,509). This rejection is respectfully traversed.

Claim 1 recites, in part, a substrate provided with a layer of aligned fine particles. A first monomolecular organic coating is formed on the surface of the fine particles and a second monomolecular organic coating is formed on the surface of the substrate. The average diameter of the fine particles is 0.5 nm or more.

Bulkowski discloses a system for manufacturing arrays having metal coordination compounds aligned on a substrate. The metal coordination compounds of Bulkowski include a cationic metal and a ligand. *See e.g.* column 2, lines 38-41. Bulkowski fails to disclose or suggest a layer of aligned fine particles provided on a substrate with a first and second monomolecular coating. Applicants respectfully point out that the items referred to by element B in Figure 1 of the Office Action are neither fine particles nor metal coordination compounds. *See* Office Action, page 5. Rather, element B in Figure 1 refers to a linking agent such as pyrazine. *See e.g.* Bulkowski, column 4, lines 30-34. The metal coordination compounds, which are aligned on a substrate, are represented by element C of Figure 1 of the Office Action. *See*

e.g. column 4, lines 20-29. Moreover, Bulkowski is directed at aligning ligands of metal cations. Nothing in the references that could be considered to correspond to the fine particles of claim 1 would have a particle size equal to or larger than 0.5 nm. Therefore, Bulkowski does not anticipate claim 1. Claims 2, 3, 5, 6, and 9-12 are allowable for at least the same reasons.

Claims 1, 2, 4-7, and 9-12 have been rejected under 35 U.S.C. 102(e) as being anticipated by Black et al. (U.S. Patent Appl. No. 2002/0022111 A, hereinafter "Black '111"). This rejection is respectfully traversed.

Claim 1 recites, in part, a substrate provided with a layer of aligned fine particles, a first film coating with a first and second functional group, and a second film coating with a third and fourth functional group. Claim 1 further recites, in part, a chemical bond formed between the second functional group and the fourth functional group, whereby the fine particles are immobilized and aligned on the substrate.

Black '111 discloses an affinity coating for forming a chemical bond between a particle and a substrate, the affinity coating denoted by X-R-Y (where R denotes a hydrocarbon or fluorocarbon chain). *See e.g.* paragraphs 0080-0082. X and Y denote functional groups, bonding to the substrate surface and particle surface respectively. *See e.g.* paragraphs 0031-0042. Even assuming that the affinity coating is substantially equivalent to the first molecular organic film of claim 1, a point Applicants do not concede, Black '111 fails to disclose or suggest the second molecular organic film. Moreover, even if a substantial equivalent of the second molecular film could be found in Black '111, groups X and Y at best correspond to the first functional group and third functional group respectively of claim 1. Black '111 fails to disclose or suggest the second and fourth functional groups of claim 1. Therefore, Black '111 does not anticipate claim 1. Claims 2, 4-7, and 9-12 depend on claim 1 and are allowable for at least the same reasons.

Claim rejections under §103

Claim 4 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Bulkowski in view of Heath et al. (U.S. Patent No. 6,159,620). This rejection is respectfully traversed. Claim 4 depends from claim 1. Heath does not fix the shortcomings of Bulkowski noted above. Therefore, Bulkowski would not lead a person skilled in the art to the invention of claim 1, even in view of Heath. Claim 4 is allowable for at least the same reasons.

Claim 3 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Black '111 in view of Black et al. (U.S. Patent No. 6,162,532, hereinafter "Black '532"). This rejection is respectfully traversed. Claim 3 depends from claim 1. Black '532 does not fix the shortcomings of Black '111. Therefore, Black '111 would not lead a person having skill in the art to the invention of claim 1, even in view of '532. Claim 3 is allowable for at least the same reasons.

Claim 8 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Black '111. This rejection is respectfully traversed. Claim 8 depends from claim 1 and is therefore allowable for at least the same reasons as discussed above with respect to claim 1.

Claims 36 and 37 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Covington (U.S. Patent No. 6,730,395) and further in view of Black '111. Claims 36 and 37 have been canceled and this rejection is therefore moot.

Claim 38 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Covington in view of Black '111 and further in view of Yamamoto et al. (U.S. Patent No. 6,147,843). Claim 38 has been canceled and this rejection is therefore moot.

Claims 39 and 40 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Heath in view of Black '111. This rejection is respectfully traversed.

Claim 39 recites, in part, a semiconductor device including a barrier layer serving as a tunnel barrier layer provided on a semiconductor substrate. A first monomolecular organic coating film is formed on a surface of the barrier layer, said first monomolecular organic coating film including a first functional group and a second functional group. Claim 39 further recites, in part, that a second monomolecular organic coating film is formed on surfaces of fine particles, said second monomolecular organic coating film comprising a third functional group and a fourth functional group.

Heath fails to disclose or suggest a first and second monomolecular organic coating films, the first coating film including a first functional group and a second functional group and the second coating film including a third functional group and a fourth functional group. Black '111 does not fix the shortcomings of Heath. Therefore, Heath would not lead a person having skill in the art to the invention of claim 39, even in view of Black '111.

Claim 40 recites, in part, a semiconductor memory device having a first monomolecular organic coating film including a first functional group and a second functional group and a second monomolecular organic coating film including a third functional group and a fourth

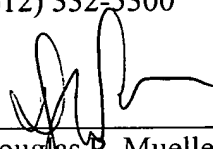
functional group. Therefore, Heath would not lead a person having skill in the art to the invention of claim 40, even in view of Black '111 for at least the same reasons as with respect to claim 39.

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Respectfully submitted,

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